REPORT

ON THE

VARIOUS IMPROVEMENTS,

CIVIL AND MILITARY,

THAT MIGHT BE MADE IN THE HAVEN OR HARBOUR OF

HARTLEPOOL:

AS SURVEYED AT THE REQUEST OF THE CORPORATION, BY

R. DODD, ENGINEER.

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1795.

BRITISH MUSEUM

Gentlemen,

As this Report may be peruſed by perſons not intimately acquainted with the varied ſituation and ſhores of Britain, although equally intereſted with you in the improvement of her ſea-ports, and the welfare of the country at large, it may be neceſſary to ſtate, that Hartlepool, in the North Sea or German Ocean, is ſituated near the center of the extenſive bay formed from Seuter-point, in the north-eaſt part of the county of Durham, and Huntley-foot-point, on the ſea-coaſt of Yorkſhire, nearly in a north-weſt half north, and a ſouth-eaſt half ſouth, line from each other, at the diſtance of more than eleven leagues from this line,—into the depth of the bay at Hartlepool three leagues.

The town and common being ſituated on a peninſula formed by the ſea, nature herſelf points out this ſpot as amply fraught with the beſt features for civil or military improvement; and what ſhould particularly awaken our attention are the ſufferings of the diſtreſſed mariner, who, when forced by tempeſtuous weather into the bay, will here find a ſafe harbour.

Let us now look at Hartlepool in a more extenſive point of view, in that of a naval depôt, or harbour for ſhips of war; and for an eſtabliſhment of this nature, there is not, I firmly believe, a more eligible ſituation in the whole iſland, as any neceſſary depth of water may here be obtained, and ſhips be enabled to paſs into the open ſea in a few minutes. Here too is every convenience for ſlips for ſhip-building, docks for repairing, lying up in ordinary, &c. &c. and thoſe ſhips that may be thought neceſſary for the protection of our northern trade will here find a ready and ſecure harbour.

Conſidered in the light of a garriſon town, Hartlepool, from its ſituation, may vie with Gibraltar; on one ſide rendered almoſt inacceſſible by ſtupendous rocks, and eaſily fortified, on the other, from the circumſtance of there being no commanding heights near enough to annoy it. An artillery academy might with great propriety be inſtituted at this place; and here experiments might be made to the utmoſt extent by land or water; advantages which even the Royal Academy at Woolwich is deſtitute of.

When we conſider that our very ſtrength and conſequence as a nation ſtand on our being a commercial people, it is evidently our higheſt wiſdom to pay every attention to maritime affairs. To improve our harbours, make our rivers navigable, and to open communication by means of canals, are works becoming the genius of a great and enlightened people, and a certain ſource of wealth and proſperity.

The now mouldering turrets and fortifications around the inner harbour of Hartlepool beſpeak it to have been once a place of grandeur and importance, for within thoſe walls lay ſecure from the inſulting foe the fleets of the then Prince Biſhop of Durham; and I am fully convinced that the great outer harbour, termed the Slake, provided that it was cleaned to a ſufficient depth, might, even at the preſent day, be made to contain the whole navy of Great-Britain.

From St Abbs to Flambro' Head, no place in the North Sea appears equal to Hartlepool for ſhattered ſhips on a lee ſhore; for ſhould the tide at low ebb prevent their immediate entrance into the propoſed harbour, they would, from their grounding on the ſoft ſand near its mouth, receive little injury; and when once entered, according to the ſeaman's phraſe, they might *moor with rope-yarn*; for of all the harbours I have yet ſeen, this will be one of the moſt placid and ſecure. No rapid rivers empty themſelves here to diſturb the ſerenity of this place; and the mariner will here, when the plan is carried into effect, find a complete aſylum from the fury of the ſtorm. Here alſo the highly-elevated light, varied according to the time of tide, would direct him in the darkeſt nights.*

The utility of a nightly-burning light at Hartlepool, elevated on the old pier end, or the church ſteeple, will be very great to homeward-bound ſhips from the Baltic, Norway, or the Dutch coaſt, making the land in the night, particularly in blowing weather: If bound to the north or ſouth, the wind from that quar-

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* I diſapprove of the management of moſt of the lights at our harbour mouths, which are taken down at low water; they ſhould burn during the whole night as land marks, and be varied according to the depth of water at the harbour entrance, by adding to them, or taking from them: For inſtance, three reflecting lights on a triangle; at low water, one; at half or three-quarters flood, or ebb, two; the quarter before and after high water, three;—or if but one light, vary the lantern with tranſparent coloured glaſs, as red, blue, green, or yellow, according to the time of the tide: Theſe would ſoon be known by the ſeamen.—Sea-lights have been much improved by the introduction of reflectors, and giving to others horizontal circular motions; but they are ſtill capable of further improvement. When well conducted, they are the means of ſaving many ſhips and men, and on that account deſerve the ſtricteſt attention.

ter, they might put in here, and wait for a more favourable gale. Coaſting veſſels will derive the greateſt advantage from this light, as it would enable them to make more bold with the ſhore, by knowing its exact bearings.—I am ſo great a friend to nightly lights, that I hope the time is not far diſtant when every prominent and dangerous part of the iſland will be decorated with them. Whether lighted by coal or oil, their uſefulneſs to the mariner will be equally the ſame; if with the former, they might be amply and cheaply ſupplied with ſmall coal from this coaſt, if for that purpoſe Government would ſee the neceſſity of remitting the coaſting duty.

If the general adoption of theſe light-houſes ſhould not take place, I wiſh, although a new meaſure, one that would be extremely uſeful and convenient to the mariner, viz. that each of theſe dangerous points round the coaſt frequented by ſhipping in the dark nights during the tempeſtuous months of winter, might be attended by one perſon, at certain periods of time ſending ſky-rockets into the air; the number of blazing ſtars they emit at the period of their exploſion to determine the place from whence they are ſent.

Hartlepool is admirably ſituated for ſheltering ſhips from the prevailing ſtorms at the north-eaſt, and from the tides ſetting rapidly along this coaſt, which vent much of their fury on thoſe dangerous ſands at the Tees mouth, many unfortunate ſhips drive thereon; in which caſe their loſs becomes inevitable, with too often the loſs of the lives of their navigators, which this harbour might be a perfect means of preventing. It is ſingular that Hartlepool, fraught with every deſirable feature for making one of the beſt harbours in the kingdom, ſhould of late years be ſo much neglected. The ideas of our anceſtors were materially different. An ancient hiſtorian obſerves, "the important ſituation of Hartlepool was obvious to the Normans; it was a place capable of receiving ſhips and troops from the continent on every emergency, when the northern borders were troubled; and thence the family of the Brus' were induced to make it a place of ſtrength.—Thoſe Brus' built the haven and wall about the town of Hartlepool, with ten towers on each ſide of the haven, and a chain to be drawn between them near the haven—which haven would hold 100 ſail. The greater part of the ruins of thoſe fortifications are perfectly to be ſeen at this day, bearing a great ſimilitude to the walls of Newcaſtle-upon-Tyne."

If in thoſe barbarous ages Hartlepool was ſo much valued, when this iſland had no commerce ſave a little tin trade in Cornwall, what ought it to be at this period, when it is allowed on all hands to be the firſt commercial country in the univerſe? I am well aware an objection may be ſtarted, that Hartlepool is not ſituated in a manufacturing part of the country; but let me obſerve, that a ſecure harbour, or haven, would in proceſs of time tend much to make it ſuch. For let us remember that the air of this neighbourhood is remarkably ſalubrious; ſurrounded by a rich corn country, where the price of labour is reaſonable, and the neceſſaries of life extremely moderate. Here alſo may be had abundance of excellent ſtone; and the lime trade might be carried on to the greateſt extent. Its preſent fiſhery, though now very conſiderable, might with encouragement, be increaſed tenfold.

Let us now view the importance of this harbour as a national one, and we ſhall find it highly ſpoken of in the reign of Charles the firſt, the period in which the coal trade began to flouriſh. As it has been uſed as a place of ſafety from ſtorms for veſſels of every deſcription, particularly coaſters and colliers, it was at thoſe early periods infinitely better calculated for that purpoſe, than, without the proper improvements, there is a poſſibility of its being in the preſent day—The reaſon is obvious; the veſſels then in the merchants' ſervice were built on a ſmaller ſcale, and of courſe drew leſs water: Whereas, in the preſent day, ſeveral of our merchant ſhips exceed the tonnage and draught of water of the then men of war— a ſufficient reaſon for its enlargement and improvement.

The many years neglect of this important place, has been the principal cauſe of the greater part of both the inner and outer harbour being nearly filled with ſlake; but this may be eaſily removed, to the great advantage of the ſurrounding lands, which, with ſo rich a manure, will be highly benefited—The ſituation of this harbour is ſuch, that ſhips may enter it at almoſt all periods. In winter they may put in here when ſurpriſed with a head wind, a long dark night, or the appearance of turbulent weather: Here they may ride in perfect ſafety without letting go an anchor, and return to ſea again next morning, with the advantage of rank-keeled or ſharp-bottomed ſhips, lying without coming near the ground; from which veſſels of all deſcriptions are beſt preſerved, unleſs when laid thereon for repairs.—The entrance from the bay to the harbour is extremely bold, deep, and good anchoring ground: Here they may ride in 4 or 14 fathom water. Veſſels wiſhing to make the harbour in a weſterly wind may make long reaches, having plenty of ſea-room, and little to obſtruct them, —a peculiar advantage to this port, ſuperior to the Tees, the Wear, or the Tyne; as ſtrong weſterly winds, prevent them making thoſe ports, while the only obſtruction in this bay, is the long ſcar.*

If an ancient Roman law decreed a reward to that man who ſaved the life of his fellow, what reward ought not this country to adminiſter towards making an aſylum here, which may be the means of ſaving the lives of many thouſands? To point out the neceſſary improvements for that deſirable end, I recommend the immediate erection of a well built pier from the north-weſt angle of the town, near the entrance of the old harbour, to the main land on the oppoſite weſt ſhore; which, by allowing a ſufficient central width for the erection of flood-gates for veſſels to enter the harbour, the length of the pier would be 433 yards. The depth would vary at ſundry places, in clearing away the obſtructions to obtain a good foundation, which is an excellent blue clay. Adjoining the point of land on the weſt ſhore, the depth of the pier would be very inconſiderable. The whole I find at a medium of 20 by 25 feet, and would contain 24078 cubic yards of ſtone work.—The inner part, or north ſide of this pier, I ſhould recommend to be executed with well jointed ſtones, laid in a terrace under high water line, made perfectly water proof, then well fendered, piled, &c. On the outer or ſouth ſide, the ſtones may be kept in a ruder ſtate; for experience teaches us, that where they thus face the open ſea they are infinitely the beſt, as they act in ſome meaſure as break waters to the ſea that ſtrikes againſt them, and ſo more eaſily defeats its force; whilſt ſmooth finiſhed piers receive the whole ſhock of its velocity.

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* A reef of rocks, laid down extremely erroneouſly in all the ſea charts. It is by no means ſo conſiderable as there delineated; but it is certainly neceſſary that it ſhould be well beaconed off, for the uſe of ſtrangers. Had my orders for the ſurvey extended further ſouth, I ſhonld have certainly pointed out what I conceive to be very practicable, and that is, a new channel for the river Tees to empty itſelf into, that fine bay between this long ſcar, and the North Gare Sand; by which means the preſent horrid navigation at the mouth of the Tees, and for ſix miles up, would be totally diſuſed, for the ſafe and more ready way of communication with the town of Stockton.---This, I preſume, I could eaſily demouſtrate, with its neceſſary eſtimates, &c. By this means, immenſe tracts of flooded lands might be taken in, drained, and cultivated; the country much improved, and the river made deeper. For the happy effects of changing the courſe of a river, I need not direct your attention further than the port of Sunderland, which now admits of veſſels twice the burthen of thoſe admitted previous to that great improvement; and with the further adoption of the baſon, I recommended to the Commiſſioners in my late Survey of that river, it might be rendered ſtill more complete.

	£.	s.	d.
As ſtone and lime in abundance may be had cloſe upon the ſpot, (conveniences ſeldom to be met with) it is eſtimating it at a liberal price at 5s. per cubic yard for maſonry; which, for 24078 cubic yards, come to 6019 l. 10 s. - - - - - -	6019	10	0
To clearing obſtructions for, and keeping dry part of the foundation during the execution, 1500l.	1500	0	0
If found neceſſary to pile the foundation, 3500l. - - - - -	3500	0	0
To timber for two flood or harbour gates, aprons, &c. &c. 22648 feet, at 2s. per foot, comes to 2264l. 8s	2264	8	0
To additional aprons, piling, &c. 200l. - - - - -	200	0	0

To

To carpenters work, 500l. -	500	0	0
To four tons of iron work, at 30l. per ton, 120l. - - - -	120	0	0
To craft and neceſſary machinery during the execution, 1000l. -	1000	0	0
To labourers working, attending the ſame, and other purpoſes, 1000l.	1000	0	0
To render the outer harbour capable of containing two hundred and thirty ſail of veſſels, ſuch as uſually frequent this coaſt in the merchant ſervice, there would be a neceſſity of removing 576000 ſquare feet of the ſludge and other obſtructions: As this will form excellent manure, it may be removed at 3d. per cubic yard; and will coſt 2133l. 6s. 8d.	2133	6	8

This place will contain upwards of two hundred and thirty veſſels, allowing each of them to occupy a ſpace of two thouſand four hundred and thirty ſquare feet, which I conceive to be ſufficient room for the average ſize of veſſels that may uſe this port; but on the enlargement of trade, or the growing importance of Hartlepool, it may be made to contain twenty times that number.

To the uſeful meaſure of beaconing off the long ſcar, 200l. - -	200	0	0
To the neceſſary meaſure of erecting a light-houſe on a new conſtruction, 600l. - - - -	600	0	0

To water-hazard on the pier building, unaccounted for contigences, &c. 2000l. - - - - - - -	2000	0	0
	£. 21537	4	8

By this propoſed plan, twenty-four feet water in ſpring tides may be carried into the great outer harbour; and from ſixteen to eighteen at neap tides: But ever turned to the purpoſes of a naval harbour, a third more water may be obtained, by the many thouſand tons diſcharged at ſpring ebbs, from the immenſe reſervoir of the harbour, to ſcour and deepen the channel towards its entrance.—an advantage which muſt ever ſecure deep water to this place.

I recommend the entrance between the two piers to be forty-five feet; a ſufficient width for any merchant ſhip that may enter this harbour.*

But, as before obſerved, if Hartlepool be converted to the purpoſes of a naval harbour, the whole ſcale of workmanſhip muſt be of more conſiderable dimenſions. If the Crown undertake the execution of thoſe public works, the country would be benefited ed in a two-fold way: firſt, the trading and mercantile part, with an excellent harbour for their ſhipping; the other, the naval marine of the country, by being furniſhed with an excellent, ſafe and capacious harbour on that ſide of the iſland, ſo much wanted in the North Seas. If not executed by Government, and that thoſe valuable improvements may not be loſt to the merchants or mercantile part of the country, it is neceſſary to conſider what will be the moſt eligible plan to raiſe this ſum of 21537l. or an annual revenue to pay its intereſt. To impoſe a heavy tonnage for harbour dues upon thoſe veſſels that may be driven there through ſtreſs of weather, would fall too hard upon individuals. I think the moſt equitable way would be to lay a ſmall duty on ſhipping paſſing coaſt-ways, as its improvement is for their uſe; or if drawn from the coal, ſimiliar to what is received at Whitby, Scarborough, and Burlington. The ſum for execution is inconſiderable; and, when once compleated, the impoſt might be taken off, as the harbour dues would be ſufficient to keep the whole in repair.

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* A communication-bridge acroſs (from the pier heads) will be extremely convenient, and eaſily executed, upon a new principle, to paſs and ſwing to and fro with the gates. I diſlike the idea of a draw-bridge in ſo open a ſituation, and ſo extended a ſpan; for in erecting or depreſſing it, in windy weather, it would be attended with the greateſt difficulty. In the improved ſtate of Hartlepool, or the country adjacent, the occupation of this bridge would be very great; as ſuch, it would produce a conſiderable toll. I have not added the expence of its erection in the eſtimate, as I conceived it not immediately connected with the other public works: But the conſervators or commiſſioners might let the privilege to ſome perſon or company, to derive ſo much per cent. from their toll, which, I preſume, would keep this pier in repair.

The ſituation of Hartlepool is of too much importance to Government much longer to be neglected, if properly conſidered how its improvement will be interwoven with the good of the nation at large. Let us remember, that, to the days that are paſt, ſimiliar ones may return. In the Dutch war of Charles II. and during the Commonwealth under Cromwell, the actions in the North Sea were deſperate and bloody, laſting for days together. The Dutch are now our enemies: It may be ſaid they have not the navy they had at that period; but they may improve it; and they now enjoy what they were then deſtitute of, the aſſiſtance of the French. Does not this point out the moſt forcible reaſon for our having ſuch a naval port as that at Hartlepool, ſo near the enemy's coaſt. It is alſo moſt happily ſituated for the protection of the northern trade of this iſland, and would prove a formidable barrier againſt any hoſtile attacks on this part of the country.

The revenue ariſing from the export of coal from the Tyne and Wear, ſtrengthens our ſinews as a nation; and the nurſery breeds the beſt of ſeamen for extending wide our commerce, and the moſt active guardians and defenders of our ſtate.

It has been ſaid, that great and wiſe prince, Alfred, held this as a naval port, and that Cromwell, juſt before his death, determined to re-eſtabliſh it as ſuch Here are, as before obſerved, every convenience for laying down ſlips for the building of ſhips, making wet or dry docks, boat-houſes, maſt-yards, rope-walks, ſail-warehouſes, anchor-forges, victualling-offices, timber-yards, with plenty of ſpace for magazines of every deſcription; theſe conveniences will be beſt ſeen by referring to the drawings of the plans I have laid down. It is impoſſible to point out every advantage that would accrue to the nation and navy on this being rendered a naval port; but from the knowledge I have of other ſimiliar concerns, I have no heſitation in declaring that this would be infinitely ſuperior to any in the kingdom, for the readineſs with which ſhips of war would paſs in or out, to or from the open ſea, in a few minutes of time; and, by the means of well-moored warping buoys, they might enter to, or return from, the harbour, let the wind be in any direction whatever.

If we conſider its ſituation as a garriſon town, there is none in the kingdom ſuperior to it; ſtanding in a dry and healthful ſpot, with a good air, and in a plentiful country. That it has once been a garriſon town of conſequence, hiſtory and its now ruinous fortifications plainly demonſtrate.*

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* A modern writer of conſiderable ingenuity, Mr William Hutchinſon, deſcribing the ancient fortifications of Hartlepool, ſays, "There are few places in this kingdom which give the traveller ſo perfect an idea of the fortifications of former times as Hartlepool; a long-extended wall ſtrengthened by demi-baſtions at intervals, ſome rounded, others ſquare; various gates and ſallyports, ſecured by machicolations and the portcullis; ſome of the gates defended by angular, others ſquare turrets; all the variety appearing which had grown into uſe in that age. As the wall runs along the edge of the creek, behind the point of land which projects itſelf into the ſea, and from thence turns to croſs the iſthmus to the oppoſite cliff, the figure it forms is not regular, giving firſt a triangle, and then running with a ſweep or bend north and eaſtward at the neſs end, or north-eaſt point of the wall to the ſea, it finiſhed with an acute angle, riſing on the brow of lofty rocks: The foundation has of late years been waſted by the waſhing of the waves, and that part of the wall is now gone: It was exactly ſimilar to the neſs or point of the Roman wall oppoſite to the Caſtle of Carliſle.—For a conſiderable ſpace from the ſea the wall is much broken, and at the diſtance of about twenty paces are the remains of a ſquare baſtion; from thence about forty paces is a round baſtion, projecting from the wall about two thirds of a circle, in girt nearly thirty feet: In the front of this baſtion, at the diſtance of about five yards, is a high ridge of earth, probably caſt up by the aſſailants. From the round baſtion, at about forty paces, is a ſquare baſtion about ten feet in front, and projecting about ſeven feet from the line of the wall: From thence at about forty-ſix paces is a round baſtion, ſomewhat larger than that before deſcribed, making a projection of about ten feet, not ſo prominent as the other: In all the part deſcribed the wall forms a ſtraight line, and the ground gradually inclines and falls from the edge of the cliffs where the wall begins.—At the diſtance of about forty paces, the wall forms an obtuſe angle, guarded with a turret or baſtion; from whence is a kind of horn work, projecting into the field for a conſiderable diſtance, of an angular figure, having two terraces one above another, with the remains of the glacis: The maſon work appears through the broken turf;—from thence is a very extenſive proſpect of the ſea and coaſt towards Sunderland, commanding Hawthorn Hive, or the Beacon Point, Eaſington, Elwick Beacon, and a long tract of country; at about thirty paces from the angle, there is the appearance of a ſally,

port, but the wall has been repaired and altered in modern times, ſo that it is not poſſible to aſcertain more concerning it: At the diſtance of about forty paces is a round baſtion; at about ſixty paces further the greater land gate, being the chief entrance to the town from Durham, opening upon a road forced over a level marſh, eaſily broken up or flooded in a ſiege. This gate ſeems to have been ſtrengthened with a wet ditch, and probably a draw-bridge: The whole wall, towers, and gateways are of excellent maſonry, built of limeſtone which is won in the ſea banks of ſo ſoft a nature in the bed or quarry, that it may be ſquared with an adze, but when expoſed to the air, becomes remarkably hard and durable; the arch of this gateway is rib'd, and beſides double gates had its portcullis; the width of the paſſage is ten feet, and of the whole gateway tower about thirty feet: The projection is not much above a foot from the face of the wall: It appears to have had a ſtrong tower for its ſuperſtructure, entered at each ſide from the parapet of the wall. The approach to the town from this gate was by the ſide of the haven, which muſt have made a fine appearance; as the baſon, if we may judge from the preſent ſlake or moraſs, conſiſted of ſeveral acres, where a hundred ſail might be moored. From this gateway the wall which ſecured the haven begins and runs in a direct line; the water at high tide coming up to the gate. It is ſomewhat more than eight inches thick, faced on each ſide with dreſſed ſtones, with a parapet guarded by a breaſt wall and embraſure, now greatly decayed. There is a water gate in this wall, formed by a low, pointed arch, about twenty-four feet in ſpan, and ten feet high for ſmall craft to paſs in and out of the haven without removing the boom chains; this gateway projects from the face of the wall about eighteen inches, has had flood gates, and alſo a watch tower, as we apprehend, from the remains of the ſuperſtructure. From thence at the diſtance of about ſeventeen paces is a ſquare baſtion, about eight feet in front, and nearly one hundred paces diſtant is another ſquare baſtion, and from thence about ſeventy paces is a lofty round tower, remaining very perfect, ſave the parapet and embraſures; oppoſite to it, at the diſtance of thirty-ſix feet, ſtood another town, exactly ſimilar in dimenſions, as the facia and foundations plainly ſhew. This was the grand entrance into the haven, and by the ſpace between the towers one may judge of the ſize of thoſe veſſels which were moored therein: This entrance was guarded by large boom chains ſtretched from tower to tower; the remains of the loops belonging to ſuch chains being ſtill viſible in the walls of the tower; at ten paces diſtance are the foundations of a round baſtion, near which is a modern gate, where it is preſumed formerly

As the country poſſeſſes but one artillery academy, viz. that at Woolwich, the eſtabliſhment of a ſimiliar one here, I preſume, would render eſſential ſervice to the country; for were the accident to happen, which is not impoſſible, by a deſtroying flame, or by the hands of an incendiary or enemy, that the country were to loſe the public works at Woolwich, how diſtreſsful would be the caſe, having no other to apply to!

A conſiderable eſtabliſhment might be formed here as a branch from that of Woolwich, which will be found extremely uſeful for men of war to receive a freſh ſupply of guns, ſhould they have been obliged to throw any over board in bad weather in the North Seas. Great advantages would alſo accrue to the land ſervice, as a heavy train of artillery for the northern parts of this iſland, if occaſion required it, might be ſupplied at this place, before one from Woolwich could reach York.

As great part of this country abounds with ironſtone, plenty of lime, and coal wherewith to calcine and ſmelt the ſame, I preſume Government would caſt iron cannon 20 per cent. cheaper here than at Woolwich; with admirable places among the links or ſand-hills to prove them.

Should Government not chuſe to eſtabliſh an artillery academy here, for the inſtruction of youth and artillery corps in the art of fortification, &c. they might

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was a ſmall doorway for the convenience of perſons landing from boats; at twenty-four paces diſtance, the wall forms an angle, and turns towards the ſea: This angle is defended by a half moon. The entrance into the haven had the peculiar ſecurity that veſſels coming from the ſea muſt neceſſarily double the cape or point of the iſthmus, and then proceed along the whole range and ſtretch of the ſouth wall within reach of the engines and inſtruments of war, and paſs the half-moon which guarded the angle of the wall.

might introduce another equally uſeful to the nation: The one I allude to, however new the idea, is the eſtabliſhment of a parmanent ſeminary for the improvement and inſtruction of gunners, gunners' mates and quarter gunners in the royal navy. It is certainly much to be lamented, that no greater degree of knowledge in the ſcience of gunnery ſhould be imparted to thoſe uſeful men, than merely knowing the management of a gun tackle, breaching, making up cartridges, or taking care of a powder magazine.*

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* A gunner, independent of being a ſeaman, ought to be maſter of another ſcience, not eaſily to be learnt on ſhip-board; for who are there to be his inſtructors? But this ſeminary, with eligible profeſſors, would readily qualiſy him, as well as inferior officers acting under him, which would be the means of diffuſing a ſuperior ſkill and adroitneſs in great guns through the whole navy. I would not be underſtood to inſinuate that the whole ſervice is deſtitute of men of ſcience? There are many at this period, and have been formerly, witneſs the great Robbins, of ſelf-taught genius, to whom, I am ſure, the eſtabliſhment of this ſeminary, were he now living, would give the greateſt ſatisfaction. Another part of uſeful ſcience which might be taught here, is that of fire-work making, in various forms, to be thrown off as ſignals in the night, by which means, an admiral, or commanding officer, at that period might manœuvre his fleet as well as in daylight. The ſituation of Hartlepool is admirable for experiments on the ſea, during the agitation of the water, by throwing ſhot at marks on a beach, from whence no danger can enſue; or from that beach, or the heights above, to marks floating in the agitated water. Here might be proved and demonſtrated the ſuperior uſe of the breaching gun-lock, which, in my idea, on ſhip-board, is infinitely ſuperior to any fire-match. Many ſeconds of time are loſt after giving the command of "fire," before the match reaches the touch-hole, during which the level is varied, and of courſe the ſhot is thrown paſt its mark; whereas in the well experienced uſe of the gun-lock, the ſeaman, ſtanding with the trigger-line in his hand, at a ſufficient diſtance from the gun's recoil, will watch the heave of the ſea, which is ſuperior to every coin for his level, and in the ſame moment checks the line, when the ſhot will be ſurer to come nearer his mark.

The preceding obſervations will, I hope, ſuggeſt to every friend of his country, that any plan for the improvement of thoſe purſuits, from whence England derives her chief conſequence as an iſland, is at leaſt worthy public attention. That the Britiſh navy and the Britiſh commerce are ſuperior to thoſe of any other nation, is our honeſt boaſt and our ſupreme happineſs; but that there are defects which require a remedy, and evils which admit a cure, no one acquainted with the preſent ſtate of naval tactics will be hardy enough to deny.—The long-neglected ſituation of Hartlepool too forcibly proves the truth of this remark: and it would be one of the firſt felicities of my life to be conſcious, that any thing I may have taken the liberty to ſay on the ſubject has been in the ſmalleſt degree inſtrumental in calling the notice of Government to the moſt ample reſtoration of this unequalled harbour.

I am, Gentlemen,

Your obedient ſervant,

R: DODD.

Newcaſtle, December 1, 1795.

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